

### **REMARKS**

Applicants appreciate the Examiner's thorough examination of the subject application and request reconsideration of the subject application based on the foregoing amendments and the following remarks.

Claims 1-32 are pending in the subject application. Claims 18-22 and 28-31 are withdrawn from consideration as the result of an Examiner's restriction requirement. In view of the Examiner's earlier restriction requirement, Applicants reserve the right to present the above-identified withdrawn claims in a divisional application.

Claims 1-17, 23-27 and 32 stand rejected under 35 U.S.C. §102 and/ or 35 U.S.C. §103.

Claims 1, 13, 23, 26 and 32 were amended without disclaimer or waiver to more clearly and distinctly claim Applicants' invention so as to advance prosecution.

Claims 33-41 were added to more distinctly claim embodiments and/or aspects of the present invention. The amendments to the claims are supported by the originally filed disclosure.

The Title was objected to and correction required. The Title was amended to address the Examiner's objections and/or rejections. The amendment to the Title does not introduce new matter because it is editorial in nature and also is supported by the originally filed disclosure.

### **35 U.S.C. §102 REJECTIONS**

Claims 1-3, 6-14, 16-17, 23-24, 26-27 and 32 stand rejected under 35 U.S.C. § 102(e) as being anticipated by the identified prior art for the reasons provided on pages 3-8 of the above-referenced Office Action. Because claims were amended in the foregoing amendment, the

following discussion refers to the language of the amended claim(s). However, only those amended features specifically relied on in the following discussion shall be considered as being made to overcome the prior art reference. The following addresses the specific rejections provided in the above-referenced Office Action.

**CLAIMS 1-3, 6-8, 11-13, 16-17, 23-24, 26-27 & 32**

Claims 1-3, 6-8, 11-13, 16-17, 23-24, 26-27 and 32 stand rejected under §102(e) as being anticipated by Hasegawa et al. [USP 6,563,781; “Hasegawa”] for the reasons provided on pages 5-8 of the above referenced Office Action.

Applicants respectfully traverse. As explained below, and with reference to MPEP-1896, Applicants respectfully submit that Hasegawa is *not* a proper prior art reference. Thus, withdrawal of the within rejection is respectfully requested.

The differences between national applications filed under 35 U.S.C. §111(a) and a US national stage application submitted under 35 U.S.C. §371 are summarized and discussed in MPEP-1896. In particular there is provided a discussion regarding the effective date as a reference.

More specifically, MPEP-1896 indicates that if a reference resulted from, or claimed the benefit of, an international application; and if the *international application* meets the following three conditions, then the international filing date is the US filing date for prior art purposes under §102(e):

- (1) The *filing date* for international application is *on or after* November 29, 2000;
- (2) The international application designated the US; and
- (3) The international application was *published* under PCT Article 21(2) *in English*.

It is further provided that if the international application was filed on or after November 29, 2000 but did **not** designate the US or was **not** published in English, the international filing date is **not** to be treated as the as a US filing date for prior art purposes. In such a situation, the reference may be applied under §102(e) as of any later US filing date of an application that properly claimed the benefit of the international application. If the international application has a filing date prior to November 29, 2000, then it is further stated in MPEP-1896 that the reference shall be applied under the provisions of 35 U.S.C. §§ 102, 374 as they existed prior to the AIPA amendments.

Hasegawa is continuation of international (PCT) application No. PCT/JP99/06284 that was filed on November 11, 1999. The continuation was filed on March 14, 2002 and also was published in the US on July 18, 2002. As such, the international application to which Hasegawa claims the benefit of, was filed *before* November 29, 2000. It should be noted that even if it was filed after November 29, the filing date for prior art purposes still would not have been the international filing date as the international application would not have been published in English.

In view of the foregoing; because the international application to which Hasegawa relates has a filing date prior to November 29, 2000, then Hasegawa shall be applied under the provisions of 35 U.S.C. §§ 102, 374 as they existed prior to the AIPA amendments. As provided in pertinent part in MPEP-1896, in such a case:

(1) For US patents, the reference is to be applied under §102(e) as of the earlier of the date of completion of the filing requirements under 35 U.S.C §371 or the filing date of the later-filed US application that claimed the benefit of the international application.

(2) For US application publications of applications that claim the benefit under 35 U.S.C. §§120 or 365(c) of an international application filed prior to November 29, 2000, the reference shall be applied under §102(e) as of the actual filing date of the later-filed US application that claimed the benefit of the international application.

Applying either of the above, it is clear that the filing date for prior art purposes is the filing date of the later filed US application. As such, for Hasegawa the effective filing date for prior art purposes is March 14, 2002.

The subject application was filed on May 23, 2001, which date predates the filing date for Hasegawa. As such, Hasegawa is not a proper prior art reference under 35 U.S.C. §102(e). Therefore, withdrawal of the within rejection and allowance of the associated claims is respectfully requested.

It is respectfully submitted that claims 1-3, 6-8, 11-13, 16-17, 23-24, 26-27 and 32 are patentable over the cited reference for the foregoing reasons.

**CLAIMS 1-2, 9-10 & 12-14**

Claims 1-2, 9-10 and 12-14 stand rejected as being anticipated by Ueyangi [USP 6,396,776; "Ueyangi '776] for the reasons provided on pages 3-5 of the above referenced Office Action. Applicants respectfully traverse. As indicated above, claims were amended in the foregoing amendment and so the following discussion refers to the language of the amended claim(s). However, only those amended features specifically relied on in the following discussion to distinguish the claimed invention shall be considered as being made to overcome the prior art reference.

Applicants claim, claim 1, an information write/read head for a heat-assisted read/write system, where a recording track on a recording medium is partially heated by projecting thereto a light beam. Such an information read/write head includes a magnetic head and an optical slit. The magnetic head magnetically records or reads information with respect to the recording track and has a magnetic gap in a longitudinal direction substantially orthogonal to a longitudinal direction of the recording track. The optical slit allows the light beam for use in heating the recording track to pass therethrough and to be guided to the recording track. Also, the optical slit includes a light emitting section, a longitudinal direction of which is set substantially parallel to the longitudinal direction of the recording track, and whose width in a width wise direction is shorter than a diffraction limit of the light beam.

In contrast to the present invention, Ueyangi '776 discloses and describes a recording/reproducing head that includes one magnetic head (*i.e.*, coil 10) that only is used to magnetically record information to the magnetic recording film on a substrate, a second magnetic head (*i.e.*,

magnetic sensor 11) that only is used to reproduce a recording signal from the magnetic recording film, and a combination of lenses, mirror and a semiconductor laser 2 that are arranged so that a near field wave is propagated to the magnetic recording film.

In sum, Ueyangi '776 does not disclose nor describe the information read/write head of the present invention. More specifically, Ueyangi '776 does not disclose nor describe a read/write head that includes a magnetic head that magnetically records or reads information with respect to the recording track and an optical slit that allows the light beam for use in heating the recording track to pass therethrough and to be guided to the recording track.

As indicated herein, claim 1 was amended to advance prosecution and to more distinctly claim the present invention, without disclaimer or waiver, so as to advance prosecution. The information recording/reproducing head of the present invention, and more particularly claim 1, yields a configuration whereby the respective directions of the optical slit and the magnetic head are arranged with respect to the recording track so as to realize improved recording track density by reducing the recording track width (*i.e.*, length in the direction orthogonal to the recording tracks) than that in the conventional structure.

In particular, claim 1 was amended so as to indicate that the lengthwise direction of the light emitting section of the optical slit is set substantially parallel to the recording track. With such a structure, the width (width A) in the direction orthogonal to the recording track of the recording mark is determined based on the width in the widthwise direction of the optical slit. As also set forth in claim 1, the optical slit is formed so as to have a width in the widthwise

direction to be shorter than the diffraction limit of the light beam. Thus, the present invention can form a recording track having a smaller width A than the diffraction limit of the light beam.

Furthermore, since the longitudinal direction of the light emitting section of the optical slit is set substantially parallel to the recording track, a required amount of light transmitted through the optical slit and is reflected on the recording track can be ensured. As a result, the target recording track, that is subjected to writing or reading, can be heated in a shorter period of time. This, thereby realizes higher speed writing and/or reading information.

In particular, claim 1 also was amended so as to indicate that the magnetic gap in a longitudinal direction of the magnetic head is set so as to be substantially orthogonal to a longitudinal direction of the recording track. As is described in the subject application, as the light passing through the optical slit heats the recording medium, a high temperature region is formed along the recording track on the recording medium. With the above described structure of configuration of the magnetic head, the width of the recording mark in the longitudinal direction of the recording track (hereinafter referred to as width B) is thus determined by the width in the widthwise direction of the magnetic gap. As a result, the magnetic gap width can be physically reduced to the width B, which in turn reduces the width B of the recording mark.

Applicants respectfully submit that the above-described amendments to the magnetic head and optical slit also further distinguish the information write/read head for a heat-assisted read/write system of claim 1 from Ueyanagi as hereinafter described. Ueyanagi, with specific reference to Fig. 11C thereof, discloses an opening 13'; however, the longitudinal direction of this opening 13' is set orthogonal to the tracking direction X (see col. 10, lines 18-20 thereof).

Also, this opening 13' of Ueyanagi is formed in an opposite direction to the direction in which the optical slit of the present invention is formed. According to Ueyanagi, it is *NOT* possible to reduce the width A in the direction orthogonal to the recording track of the recording mark as reduced in the present invention, and the width A in Ueyanagi is determined based on the beam diameter 9a. Further, in Ueyanagi the magnetic coil 10 for recording is arranged so as to surround the opening 13' (see Fig. 11C thereof). Such an arrangement is completely different from the structure of the present invention wherein the longitudinal direction of the optical gap of the optical head is set substantially orthogonal to the recording track. In sum, and in view of the foregoing remarks regarding amended claim 1, it can be readily seen that the structure of the presently claimed invention is completely different from that disclosed or described in Ueyanagi.

The foregoing also at least applies to distinguish each of claims 2, 9-10 and 12 from the cited reference as well as to also distinguish the information writing/ reading device of claims 13 or 14 from the cited reference.

It is respectfully submitted that claims 1-2, 9-10 and 12-14 are patentable over the cited reference for the foregoing reasons.

The following additional remarks shall apply to each of the above.

As provided in MPEP-2131, a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.

*Verdegal Bros. v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Or stated another way, "The identical invention must be shown in as complete detail as is contained



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in the ... claims. *Richardson v Suzuki Motor Co.*, 868 F.2d 1226, 9 USPQ 2d. 1913, 1920 (Fed. Cir. 1989). Although identify of terminology is not required, the elements must be arranged as required by the claim. *In re Bond*, 15 USPQ2d 1566 (Fed. Cir. 1990). It is clear from the foregoing remarks that the above identified claims are not anticipated by either of the two cited reference(s).

It is respectfully submitted that for the foregoing reasons, claims 1-3, 6-14, 16-17, 23-24, 26-27 and 32 are patentable over either of the two cited references and thus, satisfy the requirements of 35 U.S.C. §102. As such, these claims, including the claims dependent therefrom are allowable.

#### 35 U.S.C. §103 REJECTIONS

Claims 4-5, 15 and 25 stand rejected under 35 U.S.C. §103 as being unpatentable over the cited prior art for the reasons provided on pages 8-10 of the above-referenced Office Action. Because claims were amended in the foregoing amendment, the following discussion refers to the language of the amended claim(s). However, only those amended features specifically relied on in the following discussion shall be considered as being made to overcome the prior art reference. The following addresses the specific rejections provided in the above-referenced Office Action.

#### **CLAIMS 4-5, & 25**

Claims 4-5 and 25 stand rejected as being unpatentable over Hasegawa et al. [USP 6,563,781; “Hasegawa”] in view of Kino [USP 5,689,480] for the reasons provided on pages 9-10 of the above referenced Office Action. Applicants respectfully traverse.

As indicated in the discussion above regarding the §102(e) rejection of claims 1-3, 6-8, 11-13, 16-17, 23-24, 26-27 and 32, Hasegawa is *not* a proper prior art reference. As such, the combination of Hasegawa and Kino also cannot be a proper combination of references for prior art purposes as well. Thus, withdrawal of the within rejection and allowance of the claims is respectfully requested.

As to Kino, Applicants offer the following additional observations. Kino discloses and teaches a silicon wafer 17 having formed thereon a tapered waveguide 16. The relationship between the longitudinal direction of the tapered waveguide 16 and the track, however, is not defined anywhere in Kino. As such, it necessarily follows that Kino is totally silent about, or as to, the relationship between the magnetic head and the track.

It is respectfully submitted that claims 4-5 and 25 are patentable over the cited reference(s) for the foregoing reasons.

#### **CLAIM 15**

Claim 15 stands rejected as being unpatentable over Ueyangi [USP 6,396,776; “Ueyangi ’776] in view of Mandella [USP 6,181,478] for the reasons provided on page 9 of the above referenced Office Action. Applicants respectfully traverse.

As indicated in the discussion above regarding the §102 rejection of claims 1-2, 9-10 and 12-14, Ueyangi `776 does not disclose nor describe the information read/write head of the present invention. It also is respectfully submitted that Ueyangi `776 does not teach nor suggest the information read/write head of the present invention as well as not providing any teaching, suggestion or offer any motivation for modifying the read/ write head disclosed in Ueyangi `776 so as to yield the information read/write head of the present invention.

As indicated in the grounds for rejection, the secondary reference is being used for the limited purposes of teaching the use of an optical fiber. As such, the secondary reference is admittedly being used for the limited purposes of supplying a teaching of the further limitations of claim 15.

As such, and at least for the foregoing reasons provided herein regarding the limited teachings of Ueyangi `776, Applicants respectfully submit that claim 15 is distinguishable from the combination of Ueyangi `776 and Mandella.

It is respectfully submitted that claim 15 is patentable over the cited reference(s) for the foregoing reasons.

The following additional remarks shall apply to each of the above.

As provided in MPEP 2143.01, obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. *In re Fine*, 837 F. 2d 1071, 5

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USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F. 2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

As provided above, the references cited, alone or in combination, include no such teaching, suggestion or motivation.

Furthermore, and as provided in MPEP 2143.02, a prior art reference can be combined or modified to reject claims as obvious as long as there is a reasonable expectation of success. *In re Merck & Co., Inc.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Additionally, it also has been held that if the proposed modification or combination would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. Further, and as provided in MPEP-2143, the teaching or suggestion to make the claimed combination and the reasonable suggestion of success must both be found in the prior art, not in applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). As can be seen from the forgoing discussion regarding the disclosures of the cited references, there is no reasonable expectation of success provided in the reference(s). Also, it is clear from the foregoing discussion that the modification suggested by the Examiner would change the principle of operation of the device disclosed in Ueyangi '776.

It is respectfully submitted that for the foregoing reasons, claims 4-5, 15 and 25 are patentable over the cited reference(s) and thus, satisfy the requirements of 35 U.S.C. §103. As such, these claims are allowable.

#### CLAIMS 33-41

As indicated above, claims 31-41 were added to more distinctly claim embodiments/aspects of the present invention. These claims are clearly supported by the originally filed disclosure, including the originally filed claims (*e.g.*, see Figs 1, 2, 5 and pages 10-13 of the subject application). It also is respectfully submitted that these added claims are patentable over the cited prior art on which the above-described rejection(s) are based.

#### SEPCIFICATION OBJECTIONS

The Examiner objected to the TITLE as not being descriptive of the invention being claimed and requested correction. The TITLE has been amended in the instant amendment to address the Examiner's objections. As such, the TITLE, as amended, is considered acceptable.

It is respectfully submitted that for the foregoing reasons, the specification including the TITLE, satisfies applicable Patent laws and rules and, therefore is considered acceptable.

It is respectfully submitted that the subject application is in a condition for allowance. Early and favorable action is requested.

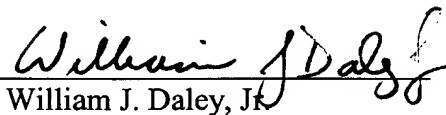
Because the total number of claims and/or the total number of independent claims post amendment now exceed the highest number previously paid for, a check is enclosed herewith for the required additional fees. However, if for any reason a fee is required, a fee paid is inadequate

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or credit is owed for any excess fee paid, the Commissioner is hereby authorized and requested to  
charge Deposit Account No. **04-1105**.

Respectfully submitted,  
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